

## The Need of a Fixed Moral Code

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*An address delivered before the Regional Industrial Conference,  
at Cincinnati, Ohio, March 26, 1935.*

PASSING, as we are, through the sixth year of the depression, it is to be expected that many are discouraged. We are still suffering from the inevitable economic consequences of the Great War. While discontent has grown in our country owing to the long-protracted period of the economic crisis, and while the exposure of the abuses of capitalism has produced an ominous reaction, we must be grateful for the patience, the fortitude and the forgiving spirit shown by the great masses of the American people. In many ways we are fortunately situated. If we could get all groups, especially the industrialists and capitalists, to work not merely for their own selfish interests, but for the common good, we could once more be a happy people, blessed not only with abundance but superabundance, through the great natural resources with which God has enriched our land.

There are those who take only a pessimistic view of things, feeling that prosperity will not return and that the world is facing the imminent danger of the destruction of Christian civilization. But the Lord Christ has not abdicated His throne as King of the World, nor as King of our own country. Oftentimes things seem so bad that one wonders how they can become worse. It is at such moments that improvement begins. If the battle between the forces of good and evil seems to be waged with varying success, the final victory will certainly be with Christ!

We may ask: Is the present state of affairs throughout the world worse than ever before? There are places where the forces of evil are for the moment triumphant, as in Mexico and Russia. An exaggerated nationalism is filling the nations with suspicion, mistrust and hatred. It is not for human judgment, however, to determine whether the evils of one age are greater than those of another.

## FIXED MORAL CODE

What is especially portentous today is not that on every side there is evidence of human frailty and sin and public crime. These always have been and always will be until the end of time. Law, human and divine, will ever be transgressed by men with free but perverse wills. What is most disheartening in our times is that many leaders of thought, many moulders of public opinion, many university professors and influential writers, deny the natural law and the very fundamental principles of right and wrong upon which all morality rests. In past ages individuals and nations sinned, indeed, but they acknowledged their crimes and begged pardon of Almighty God for them. Today our neopaganism denies the existence of the moral order and insists that there is no fixed code of morality by which men and nations must be governed, self-restrained and self-disciplined.

Outside the Catholic Church, the opinion for the most part has been growing for generations that industry and capitalism are entirely divorced from the principles of morality. We have sown the wind and we are now reaping the whirlwind. As bad as conditions are in the industrial and economic order, it is no exaggeration to say they could be reformed quickly and prosperity restored, as if by magic, if the true moral code were followed rigorously.

## MORAL DANGERS

As there are great physical dangers for those working with the forces of nature—electricity, fire and flood—so there are naturally moral dangers for those engaged in industry, business or commerce. Man's avarice may prompt him to cheat, to be guilty of extortion. His cleverness may lead him to misrepresent, to take advantage of others. Talents may be misapplied, ingenuity be put to wrong uses. There are likewise natural dangers for the State when it enters into business or industry. We have read of too many cases of graft and corrupt business deals in governmental transactions not to be convinced that in a democracy like ours the electorate will do well to insist that Government shall keep out of business and industry. The only real hope of controlling individuals and governments is through

the recognition of a fixed moral code. The mere conventions of man will not suffice. Conventional honesty will be of no avail. Even the moral code will not control men unless we succeed in instructing great numbers of individual citizens in its unchangeable principles and unless they strive to apply these principles in their daily lives.

#### THOUGHTS OF ST. THOMAS AQUINAS

I do not venture to propose a program for recovery, but I think we might profitably consider, without quoting *in extenso*, some thoughts of St. Thomas Aquinas, the great Doctor of the Schools, on questions that bear basically on the problems of industry and economics.

This master-mind of the ages enables us to put a true value on possessions. He teaches the use and abuse of worldly goods. As the Angelic Doctor sees man going through life, striving for his ultimate destiny, he finds only two things necessary: The first is fundamental. It is the exercise of virtue, for by virtue men rise to their true proportions and lead really good lives. The second is only a means to an end, and it is that one have sufficient worldly goods to enable him to lead a virtuous life. The first necessity makes man conscious of his ultimate destiny; the second makes him put a true value on material things.

#### RICHES, NATURAL AND ARTIFICIAL

According to the same teacher worldly goods, or riches, may be classified as natural and artificial. Natural riches are food, raiment and shelter. We are, as a nation, blessed with natural riches as perhaps no other nation on the face of the earth. Artificial riches, on the other hand, are due chiefly to the conventions of man. Among these artificial riches, money has first place. Again, we are the richest nation of the world. This has not been wholly a blessing.

Considering natural riches, we may say that they are necessary to man in two ways: He must have nourishment, then clothing and shelter. Man is entitled to these natural riches as much as he is to the very air he breathes, not, however, without labor or service. Since man possesses life, he is entitled to the means whereby he may sustain life. As man shall live by the sweat of his brow, he is entitled to

the labor which will procure for him the things without which he cannot live. Any organization of society, any interference, any inaction or special favor of government, which keeps men from laboring to procure the very necessities of life, is basically and morally wrong. Secondly, natural riches are necessary for man because he has a right to demand that he may live according to his human nature and human dignity. Man is entitled not only to life, but to that manner of life which human nature, redeemed by the Divine Saviour of the world, has the right to demand because of brotherhood in Christ. The basic teaching of the Catholic Church is that Christ died for every man, without exception.

It is manifest that if the moral code be rejected, if no fixed moral principles govern men, if industry and business and commerce be not subject to the moral order, there is nothing left to control the weakness and the evil impulses of men except the police force of civil authority, which without moral principles is necessarily a tyrannical authority. We are witnesses of the chaotic condition of the world today, brought about chiefly by the rejection of the immutable and eternal principles of morality.

#### EXTREMES OF WEALTH AND POVERTY

The Angelic Doctor reminds us that both extreme wealth and extreme poverty expose man to many dangers. Neither the one nor the other is a favorable condition for a virtuous life. How often do men of extreme wealth become proud and arrogant, indifferent to the welfare of their fellow men, thinking themselves made of different clay and endowed with superior judgment! How often do they become hard of heart, oppressors of the poor, devoid of sympathy for them because they are either totally ignorant of or fail to consider the right use of their possessions! The man reduced to extreme poverty is exposed to the danger of despair and to the temptation of being unjust to his fellow man and of becoming an enemy of civil government. Men so reduced are potential radicals, communists, anarchists.

To those who have not a moral sense, St. Thomas' pronouncements on the principles governing the use of riches may sound like the teachings of an extreme radical. He does not hesitate to say that when a man finds himself with possessions in excess of the requirements for a livelihood be-

fitting his state of life, he must as a matter of strict precept give in alms the amount of that excess.

Let us consider, for instance, the man who before the depression, having taken care properly of all his business obligations, spend \$300,000 on himself and his dependants from his yearly income to maintain his state of life, and still has remaining from that yearly income the sum of \$200,000. According to the Angelic Doctor, he is obliged by strict precept to give this additional or superfluous portion of his yearly income in alms for the relief of his fellow men.

Again, if a man finds himself face to face with those who are in extreme need, he is obliged to minister to them rather than to provide superfluous things for himself or for his dependents.

#### THE DESTITUTE

In the case of those wholly destitute, all property must be considered as held in common, and those in such need are entitled to share it, in order to keep body and soul together, as long as the extreme necessity last. What might be considered, technically, as violence, or theft, or breaking the law, is not under these circumstances morally wrong. This principle must be well understood. I mention it not to give wrong ideas to those who are not in reality in extreme need, but who think themselves to be, but rather that we may better understand the stewardship one has regarding his possessions. It is obviously clear that the right of one to live is greater than the right to another to possess, especially that which is superfluous. One is bound by a strict precept to give when he finds himself in possession of wealth that he does not need for himself and his dependants, or for the proper maintenance of his state in life—and this even when the poor are not in extreme need.

#### CODE OF MORALITY

I have mentioned only a few principles of the Angelic Doctor which he lays down for the right use of possessions. If those engaged in industry, business or commerce would accept and put into practice this code of morality, and if, above all, they would recognize that there are fixed and unchangeable principles governing them, we should see the

end of fabulous fortunes and we should soon get rid of the many intolerable economic abuses of our day. There would be greater sharing of profits with the laboring man and tradesman. The people would have greater purchasing power. An employer would be always seriously concerned about a just wage.

### RUMBLE OF AN AROUSED WORLD

If industrialists and capitalists have their ears to the ground they must hear the rumble of an aroused world protesting against the abuses of their system. It would be short-sighted policy for either industrialism or capitalism to attempt merely to placate the warring forces aligned against them. They must acknowledge their sins. In sackcloth and ashes they must do penance for them and if truly wise, they will adopt a moral code that is governed by unchanging and unchangeable principles—the only code that will prevent a repetition of the world crisis which during the past years has so sorely tested the souls of men.

As conditions are in our country, industrialism and capitalism must remember that the victims of the depression, and even the majority of the masses of the people, are not especially interested in capitalism. They will not give serious thought to the consequences that would befall the social order if the system of capitalism were overthrown. They do not apprehend the dangers, or the strife, or the revolution, that even the temporary victory of radicalism, atheistic socialism or communism implies. The cry is heard: Confiscate the wealth of the rich! The radical forces are clever and they are persistent. They know the weakness of our economic system and they are fearless and resourceful in attacking it. Their real strategy is an offensive, not a defensive, warfare. Throughout the length and breadth of our land in many of our universities and colleges a dangerous radicalism is being propagated which, by perverting the mind of youth, constitutes a grave menace to our country.

### TWO POPES

Two great Popes, Leo XIII and Pius XI, have pointed out clearly the faults and shortcomings of industrialism and capitalism. Many voices today are denouncing their crimes,

some in measured, others in intemperate, language. The unemployed, the hungry, the discontented, know from experience the injustice of our present economic system. College and literary radicals seem anxious to experience the thrill of overthrowing the present order of things.

Industry and capitalism must realize that the idea of the totalitarian State is gaining steadily in strength. And yet they do not seem to appreciate that this state must lead to their own undoing. Nations long held in the grip of capitalism are today rejecting its supremacy. They are following, on the one hand, the system of Fascism, and on the other the extreme of Communism. Fascism where it has had good leaders and in countries where there are Christian traditions and where moral principles are recognized and applied, has had beneficial effects and has prevented the onward march of Communism. In countries where the rulers are bad, and devoid of moral principles, the results have been most disastrous. We are witnesses today of the tragedy and curse of Communist governments.

It would be well worth while for capitalism and industrialism to realize that the Catholic Church is the most constructive force in the world today; that she is unalterably opposed to every form of dangerous radicalism, to Socialism and to Communism; that she has a real program of social justice which is entirely practical; that she has a moral code which has come down through the centuries, a code whose principles are found in the Old and the New Testament and in the fullness of Christian tradition, a code that can be applied to new conditions in every generation. This code, and this code only, can save industrialism and capitalism. A return to unrestricted competition will not work for social justice, nor for national or community welfare. The program of social justice as formulated by Pope Pius XI and applied, as it can be, within the framework of our Federal and State Constitutions, can bring back prosperity to our country.

## A Little Dictionary

*Totalitarian, Corporative, Corporate, Organic,  
Authoritarian, Fascist*

*Reprinted from the Catholic Herald (Glasgow, Scotland),  
March 9, 1935.*

WE have been so accustomed in the past few years to seeing these six words, or most of them, used indiscriminately in the newspapers to mean much the same thing, that a good many of us have got the idea that they really are words with the same meaning.

If we have not been brought quite to that point, at least we may have been led to suppose that even if they do not mean quite the same thing, nevertheless each means something that is to be found in a certain kind of political system and in that alone. So that where one of them may be used any of the others may be.

When passion is added to muddle-headedness, then, if we happen to think that one of the words stands for something very splendid, or very dreadful, that colors our view of all the others in one direction or the other.

Thus, those who regard the Corporative State as good because the Pope recommends it, think that Fascism and even Totalitarianism must, therefore, be good, too; and if they are sure that the latter are bad, then they think that the Corporative State must be bad.

Yet in actual fact, none of these words is in all its senses synonymous with any of the others and some of them mean almost the opposite to some of the others. The following account of them may, therefore, be useful.

### TOTALITARIAN

A Totalitarian State is one that claims to be the sole source of all the rights and duties of its citizens, both moral and political, and to have an absolute right to their obedience. All States called "Totalitarian" do not necessarily



do this, but since this meaning is always latent, any attempt to make the word mean something less must be viewed with suspicion.

How does this term distinguish a State from any other State? Every State is, of course, the source of many rights and duties. Thus, it is a source of the political rights that flow from its constitution. Moreover, its existence is responsible for the fact that among the moral rights and duties of its members are included some that would not exist in the form in which we find them if States did not exist, *e. g.* (normally), the duty to submit to the constituted government and the right to resist sedition against it.

#### PRIMARY MORAL RIGHTS INALIENABLE

But the political rights are only secondary rights created in the course of protecting the primary moral rights of citizens; and in the case of moral rights what the State is really doing is giving a particular form to pre-existing moral rights and duties.

The primary moral rights and duties of men existed before the State and cannot be taken away by the State, and the primary duty of obedience is a duty towards God, and no State can rightly claim obedience that conflicts with obedience to God.

The Totalitarian State, therefore, is distinguished from all other States by making certain claims in the moral sphere not made by other States, not even by most dictatorships; for most dictatorships in history, however great the executive power they have claimed, have not put forward this philosophy of moral absolutism.

#### COMPLETELY OPPOSED TO CHRISTIANITY

The Totalitarian State is, indeed, a revival of the god-State of the ancient world and as such it is irreconcilably opposed to the Christian religion and the Catholic Church.

The word "totalitarian" is sometimes used to cover what would better be called the Party State, that is to say, the State in which the ideas and methods of one political party are the only ideas and methods allowed to be put forward and practised by the citizens and are made the basis of the

State itself, so that any who do not hold them are repudiated as aliens or traitors. Conspicuous examples of such States are Russia, Italy and Germany at the present time.

### CORPORATIVE

The Corporative State is one organized on the basis of corporations, meaning by this, associations of those engaged in particular industries or professions or of those belonging to particular social or cultural "estates."

These corporations, being coördinated groups each having its own economic and political functions, provide both for the diversity of the activities of individuals and for their ultimate unification. In large communities they are an essential middle term between the individual and the State, needed to protect the individual against the over-centralized State and the State against individualistic anarchy.

### THE MEDIEVAL CORPORATIONS

These corporations may be, and at their best are, spontaneous associations of citizens, created not by the fiat of the State but by natural affinities or else deliberate choice. In that case the Corporative State so far from being identical with the Totalitarian State is almost its opposite. This is especially true of the medieval political communities, whose social and vocational groups possessed recognized rights and duties based on immemorial social customs older and stronger than governments.

### THE POLICY OF GIL ROBLES

In our own days, Gil Robles, the Spanish Catholic leader, insists that associations (or corporations) form the basis of the State, which should not supersede them by taking over their functions but should stimulate, supplement and co-ordinate them. For this purpose it must be strong but not dictatorial.

On the other hand, the corporations of the Corporative State may be practically the creations of the State, as they are, for example, in Italy. In that case they may well be little more than the instruments of a totalitarian policy. Nevertheless, it would still be true that where there is any

connection between "totalitarian" and "corporative" it is an accidental one.

### CORPORATE

This word is frequently used, vaguely, for the Corporative State, and in that case it is simply misused. If it has any distinctive meaning as applied to States, it is nearly equivalent to totalitarian, because it suggests the subordination of all the individual citizens to the needs of the whole body. More exactly, it is a synonym for "organic" in the first of the two following senses of that word.

### ORGANIC

This word is taken from biology and conveys no more than an analogy when applied to States. As an analogy it is used in two different senses with two opposite intentions.

Sometimes the State is called an organism in order to justify a totalitarian policy. It is said that the State is an entity that is more than the sum of the individuals that compose it, just as an organism is an entity that is more than the sum of the cells that compose it.

### THE STATE NOT A MORAL INDIVIDUAL

There is, of course, a certain truth in this assertion, but it is a very limited truth. If an organism is a real entity other than the sum of the cells that compose it, it is because the cells that compose it are not true individuals. But this is not true (in the moral sphere) of the State, for its citizens are moral individuals and the State is not one. Only if the citizens had no true moral lives of their own apart from the State could the State be said to be an organism in the sense defined.

Seeing that they are all moral persons independently of the State, the latter is not an organism in that sense any more than a colony of cells is an organism if the cells have independent lives of their own. The colony then is only a group of individuals with a certain permanent structure; similarly, the State is a group embodying a certain order, or set of mutual relationships, adopted by its individual members in carrying out such purposes as they have in common.

## ORGANIC AND CORPORATIVE

The other sense in which "organic" is used of the State is to denote a community of which the member-groups have spontaneous lives of their own and are not merely the artificial creation of the State. When the word is used in this way (as in two English versions of *Quadragesimo anno*) it is antithetical to "merely organized"—a phrase which suggests that the component parts of the State are not living members but pieces of a machine shaped and driven on a single mechanized plan. In this sense, therefore, "organic" is almost equivalent to "corporative" in the best sense of that word.

## AUTHORITARIAN

This word is used vaguely and is difficult to pin down. It usually seems to denote a State in which the principle of authority is dominant, as distinct from the democratic principle.

On the other hand, the authoritarian principle is not incompatible with democracy properly understood. Gil Robles, for example, has an authoritarian philosophy, but insists that the true leader derives his authority from the people whom he leads, by the very fact that it rests not so much upon force as upon prestige, which is only another way of saying that it depends upon the people's confidence.

## GENERALLY TOTALITARIAN AND FASCIST

Moreover, he connects his view of authority with his strongly antitotalitarian conception of the Corporative State. He holds that the leader should be elected by the councils of the corporations which, in their turn, are, in the last resort, controlled by popular assemblies. In these last he has great faith, quite consistently with his distrust of the present parliamentary system, with its attempt at direct representation of all the citizens.

More often, however, the authoritarian principle is linked to the totalitarian principle and to Fascism.

## FASCISM

This word was originally a proper name, which strictly speaking cannot be defined. It denoted then a number of small political groups. It has since come to be used vaguely for a whole world-outlook, and also as a term of abuse applied to anything political that the speaker happens to dislike.

The word has thus acquired meanings to some extent capable of definition, but its meaning is different in different countries. This is because in most cases it has picked up a good part of its meaning in the course of the growth of the Fascist movement in that country. In Italy itself nearly all the reasoned philosophy of the movement and most of its reasoned social and political program were worked out sometimes after the Fascisti came into power and long after the word Fascist came into use.

The difficulty in definition arising from this fact is not simply an accident. It is significant of the real implications of Fascism itself. Fascism, whether in Italy or elsewhere, has always tended to put the will before the intellect or reason, and the appeal to the emotions before the appeal by argument. It has for that very reason lacked at the outset a definite intellectual position. It has been forced to find one by the necessity of governing and also of explaining itself to the outside world.

For that reason the particular philosophy and particular program it has developed in any country have been determined, not by some intellectual position inherent in Fascism, but largely by the local conditions and the immediate needs of the time. In one country it takes one color and in another country another. In Italy it picked up from Don Sturzo's Popular party the sociological program of the encyclicals and their insistence upon the corporative character of the State. Again, in Italy, it exalts the nation as a cultural unit, while its German counterpart exalts the race.

It is everywhere consistent, however, in having an authoritarian character for the very reason that it puts will first and goes on to insist upon discipline and the subordination of all individuals to the outlook of the State.

# Relation of Science and Philosophy

JOSEPH P. KELLY, S.J.

*An article published in the Bulletin of the American Association of Jesuit Scientists (Eastern Section), for May 1935.*

IN spite of the fact that systems have been multiplied, philosophy has always retained this characteristic note: it is more universal and more comprehensive than other branches of natural learning. The natural sciences are limited; they are individual. I believe that this distinction will be admitted by all. The chemist, for example, chooses for his field, the composition and resolution of the elements. He deals with them in their quantitative aspects. He selects his materials, arranges his apparatus under such conditions as will lead him to success in determining the definite quantity of one element that will unite with a definite quantity of another. In terms of the Atomic Theory, the formula  $H_2O$  tells us that two atoms of hydrogen will unite with one of oxygen. Perhaps the force of gravity enters into the operation but that does not concern him. Nor is he distracted from his purpose by the phenomena of radiation. These occupy the attention of the physicist.

A scientist in his particular field assumes what he believes to be necessary for his science; he makes whatever hypothesis will help him and is satisfied if it can be verified. "It works," that is sufficient. So with the other natural sciences. Each is specialized, individualized and limited in its operations and purposes. Philosophy, on the other hand, is universal because it seeks first principles and more remote causes. The scientist takes observation for granted; the philosopher examines the meaning and the value of observation. Science assumes that it can know something about nature; the philosopher asks what is knowledge and how is it obtained. The scientist accepts as a starting point, the existence of the world; the philosopher looks to the origin of the universe and the purpose of its existence.

These notions, while incomplete, will show a broad distinction between the outlook and procedure of the scientist

and the philosopher. "Philosophy is not one among the sciences with its own scheme of abstractions which it works away at perfecting and improving. It is the survey of the sciences with the special objects of their harmony and their completion. It brings to this task not only the evidence of the separate sciences but also its own appeal to concrete evidence. It confronts the sciences with concrete facts."<sup>1</sup> Hence philosophy cannot be limited, as the special sciences are, either in its scope or its methods. For "it consists in examining what is supposedly ultimate, criticizing this by means of first principles of reason, which are in their turn subjected to an analysis; and so establishing what must be and what follows from the admission of these ultimates. The subject matter of philosophy is therefore one which is of its nature constant, and it may be said to cover that body of experience which is at the same time the most profound and the most common."<sup>2</sup>

#### CHANGE OF RELATIONS

These opinions are quite in keeping with the attitude of the Schoolmen towards science, although they did not have the same esteem for the natural science that we have today. I do not pretend for an instant that all our modern thinkers would ascribe to the view, whether from a fear of returning to medievalism or from an honest conviction that this quasi-domination of philosophy over science would curtail its freedom, it is not our place to decide. At any rate, there has been a notable change in the relations between science and philosophy since the days of the Scholastic Philosophers. Specialization in the modern sense did not exist. The sciences were regarded as preliminary studies to philosophy. Since then the sciences have been multiplied. Material beings have been sifted, new points of view have been considered and these in turn have become the bases of new sciences. In scholastic terms we would say that new formal objects have been determined, and thus arose physics, chemistry, astronomy, geology, etc., in the modern sense. They cast off the ties that bound them to philosophy and became autonomous.

The change was needed and new avenues of thought were

<sup>1</sup>Whitehead, *Science and the Modern World*, p. 127.

<sup>2</sup>Ed. by J. G. Crowther, *Science for a New World*, p. 189; Bosanquet, *Philosophy and Science*, Ch. I.

opened to enterprising minds. The vast sum of scientific knowledge, both theoretical and practical, that is the fruit of science of the past three centuries, needs no exposition or comment. But the scientific movement was not without its dangers. The impulse was so rapid and the growth of knowledge so expansive that it could not be assimilated. Whereas in former times it was possible for one to become a master of science, today a lifetime hardly suffices to conquer a single branch. Nor was the absolute rejection of philosophy and metaphysical principles for the best interest of science.

The proof of this statement lies in the fact that so many of our modern scientists and philosophers are calling for a philosophy of science. Since we are here discussing the relations of philosophy and science from the point of view of scholastic philosophy, we have neither time nor space to develop the relations of modern philosophy to science.<sup>3</sup>

#### NEW MEANING OF SCIENCE

A striking consequence of the scientific movement has been the change in the meaning of the word "science." Formerly science was synonymous with knowledge. It denoted knowledge (*scientia*) but an organized knowledge. Any organized system of knowledge was considered science in the general sense of the word. "Science is not merely a collection of theories about a special object a mere juxtaposition of facts and fragments of knowledge but a systematized body of knowledge, whose various parts hang together and harmonize and fit into each other like the cogs and wheels of a machine. It is only on this condition of such harmony that the manifold conclusions can be reduced to a unity and thus establish order in the mind."<sup>4</sup>

Scientists recognize this fact, for when we speak of the Science of Physics, we mean an organized body of principles, theories and facts treating of material bodies in their physical aspects. Likewise, the Science of Chemistry,

<sup>3</sup>The relations of modern philosophy to science would form a fruitful topic for many instructive articles for the *Bulletin*. I would like to indicate a few references for inquisitive spirits: Whitehead, *Science and the Modern World*; Ed. by J. G. Crowther, *Science for a New World*; Bosanquet, *Science and Philosophy*; A. W. Carr, *A Scientific Approach to Philosophy*; Planck, *Where Is Science Going?*; *Philosophy*, a quarterly published by the British Phil. Assn.; *Journal of Philosophy*, published by the Journal of Phil., Inc. Many other references may be found in the *Bulletin*, December, 1934.

<sup>4</sup>DeWulf, *Scholasticism, Old and New*, p. 94.



Biology, Government, etc. "A science is made out of facts just as a house is made out of stones. But a mere collection of facts is not a science any more than a pile of stones is a house. When we begin to relate one observation and fact with another and with established laws, then our former wonderings and observations become definite, organized and systematic science."<sup>5</sup>

There is, then, a general acceptance of the notion that organization is an essential element of scientific knowledge. Nowadays, however, the term "science" seems to be limited almost exclusively to natural sciences. There is in this use the tacit assumption that real knowledge is found in these sciences alone.

The attitude of mind which sees in science the last word on all subjects is not confined to "the man of the street." Science is ever insisting on this: that it is concerned with facts and measurements. The word, "fact" is open to some ambiguity. If we were to ask a dozen scientists to define the word, I have no doubt that we would receive many definitions; books of science are not agreed on a definition. But as far as I can judge (*salvo meliori judicio*), a fact in the scientific sense means something like this: an event verifiable by experience (or experiment).

The rejection of philosophy and the remarkable success that followed the introduction of the Inductive Method in the natural sciences, had the effect of concentrating the mind of the investigators on the phenomenal aspects of the world. Sense data and the external qualities alone were considered and whatever did not fall into this category was neglected: it was regarded as unscientific. In these conditions, knowledge and sense perception became equivalent.

#### DANGEROUS LIMITATIONS

To limit one's field of investigation in the quest of human knowledge, to the data of the senses is, no doubt, very useful for specialization but it leads to a dangerous isolation. Science deals only with the phenomenal aspects of material bodies and insofar as these qualities are measurable. Thus science has cut itself off from all problems that are outside its proper field. As we have said many

<sup>5</sup>Poincaré, *The New Physics*.

times, it is not our place to deny to the scientists the right to define the limits of their own sphere of investigation but we believe that a grave error has actually followed this mode of limitation: *viz.*, the denial of the validity of knowledge outside their own branch.

There are many who hold the opinion that questions which can find no answer in science have no meaning. For example, in the Theory of Relativity, absolute motion has no meaning because there is no ultimate, fixed norm by which it may be measured. One may place a distinction here and say that although they have no meaning in science, they may have importance in other branches of knowledge; but we contend that it is impossible in practice to isolate human knowledge in this way. Though in theory the distinction may be valid, yet in practice the scientists are applying the conclusions of science to almost every phase of human life.

Already a considerable volume of comment has appeared dealing with the philosophic consequences of the Heisenberg Principle of Uncertainty. It has opened once more the controversy of free will that was supposedly decided once and for all by the science of the last century. Naturally, in our position as scholastic philosophers, we hold that the scientific Principle of Uncertainty has nothing to do with the volitional faculty of man. There are many scientists who hold the same opinion.<sup>6</sup> But the point at issue is this: that although in theory they may distinguish between the scientific aspect and the human-value aspect of a problem, in the concrete, the separation seems to be impossible. On the other hand, I believe that this attempt to draw philosophical conclusions from the findings of science, is a recognition on the part of present day thinkers that there is a real need of a philosophy of science.

#### PRECISION VERSUS UNIFICATION

Let us look at the development of science from another point of view. Many of the principles and the formulae of Newtonian Physics consider things in an ideal state, or as a closed system. This afforded the scientist a better view of physical phenomena. By an act of the mind, called pre-

<sup>6</sup> Planck, *Causality in Nature*. Cf. *Science for a New World*, p. 347. sq.

cision, they considered some aspects of material bodies and neglected others, according to the purpose that they had in mind. They were conscious of the fact that in the concrete, certain extraneous factors would prevent the perfect realization of these principles.

For example, a body in motion on the surface of the earth would be affected by frictional contact with the ground. By examining bodies in an isolated state, the scientists believed that they could approach nearer to reality. This notion was then applied to the different sciences and Physics became separated from Chemistry; Chemistry from Astronomy, etc. They became independent sciences, each with its principles and laws. Scientific knowledge was divided piecemeal among the specialists. There was a cardinal point whose truth and consequences seemed to have escaped unnoticed, *i. e.*, that the same body (let us say, the atom or the molecule) was the object of investigation in all cases.

Men have come to recognize this fact with the growth of their knowledge. The clear distinction between Physics and Chemistry is dissolving into a branch, called Physical Chemistry. The natural sciences are breaking down their barriers. New sciences, sort of middle-sciences, have been formed. We have Biochemistry, Astrophysics. One might ask if it is possible that a sort of universal science may be created that could comprehend all the natural sciences. The mechanistic interpretation of nature was an attempt along these lines. One of its fundamental principles was that all natural phenomena should be interpreted in terms of matter and motion. It achieved some success in the inorganic world and it was applied to living beings.

### THE RÔLE OF THE PHILOSOPHER

Today, the breakdown of Materialism, as a system, is discussed openly. Purpose, design, finality are again finding place in scientific literature. Strictly, these notions are unscientific because they are not measurable quantities "nor distinguishable by physical processes." Yet these concepts seem necessary for science. In a recently published book, Sir J. Arthur Thomson affirms that the scientist must include in his category some notion of a design or purpose

in the world, and this will naturally demand the further step of the existence of a designer.<sup>7</sup> It is evident that in proposing these, the scientists are reaching out beyond the data of sense perception.

Sir J. Arthur Thomson's reason for professing a purpose in the universe is that without some such concept the world "does not make sense." The natural sciences are limited in their view and this limitation seems necessary for the minute accuracy demanded by the formulations of science. As Einstein says: "Even at the expense of completeness we have to secure purity, clarity and accurate correspondence between the representation and the thing represented. . . . One realizes how small a part of nature can thus be comprehended and expressed in an exact formulation, while all that is subtle and complex has to be excluded. . . ." Herein lies a key to the situation.

Reality, I mean the real universe, is not a simple but a very complex affair. It has many angles, many avenues of approach. The very limitations of the natural sciences prevent any one science from interpreting nature in all its complexity. Neither Physics nor Chemistry nor Crystallography exhausts the possibilities of the atom. We need a compound of these to "make sense" of the totality of reality, or perhaps better, some more general principles that will comprehend all.

In this the philosopher may play his rôle of completing the sciences. His study is a science of sciences. He does not start with all the facts of science but with those general principles which the scientist uses for discovery and correlation. His work will be "a systematized reflection upon the concepts and the methods of science and the less methodical thought of everyday practical life work, and an attempt to try them by the standard of ultimate reality and intelligibility."<sup>8</sup>

<sup>7</sup>*The Great Design*, edited by Frances Mason. Introduction.

<sup>8</sup>O'Neill, *Cosmology*, p. 36.